

Waste Management

Health Objectives for the Year 2010: Reduce the impact on public and environmental health and safety caused by improper disposal, management, or treatment of solid and liquid wastes.

Health Implications

Waste minimization and management were nationally recognized as major priorities for the 1990s. Without improved waste reduction, reuse, and recycling programs established both privately and publicly, health and environmental consequences will likely impact the citizens of Lancaster County. Vector populations (rodents, insects), polluted groundwater, over use of landfills, indiscriminate dumping and littering, overconsumption of resources, fires from improper storage, and the general “trashing” of our environment are consequences of concern to present and future generations.

In recent years, there has been dramatic improvement in Nebraska regarding how we manage solid waste (more commonly called trash). Several years ago, management of solid waste was generally accomplished by disposal in approximately 350 unlicensed open dumps and 35 licensed landfills. These sites were often poorly located, designed, and operated, and many posed a threat to the underlying groundwater. Legislation passed in 1992 shifted the emphasis of solid waste management from a purely disposal-based system to an integrated system that focuses on

reducing, recycling, and reusing, as well as safer methods for waste disposal.¹

The high quality of life in Lincoln and Lancaster County, including the overall cleanliness and beauty, is a community standard, however, standards are always subject to change. Experience in many parts of the United States has shown that as the solid-waste standards of a neighborhood or community decrease, the public tends to lose its willingness to accept personal responsibility for solid-waste problems. Community degradation transcends solid waste to encompass the areas of health, crime, social welfare, and the general economy, thus significantly reducing quality of life. The “broken window” thesis demonstrates that by making improvements, like cleaning up a neighborhood, the whole neighborhood is affected in a positive way.²

With Lincoln’s and Lancaster County’s record of pride in the living environs, it is hoped that government and citizens will continue to rally to develop and utilize innovative waste minimization and management programs, thereby protecting our local health, well being, safety, and environment. The Bluff Road Landfill has been designed and main-

Table 1. Waste Management Indicators

	Lancaster Recent	Lancaster Objective 2010	Nebraska Recent	Nebraska Objective 2010	National Recent	National Objective 2010
Waste minimization						
Percent of households participating in recycling	-- ¹	80.0	--	--	--	--
Landfill utilization (pounds per capita per year)	2431 ²	2300.0	--	--	--	--
Waste collection and treatment						
Illegal waste dumpings reported per year	210 ³	105.0	--	--	--	--
Number of garbage complaints received per year	860 ⁴	430.0	--	--	--	--
Liquid waste treated (gallons per year per capita per day)	125 ²	113.0	--	--	--	--
Percent reduction of litter on streets and right of ways	-- ⁵	25.0	--	--	--	--
Percent of households with no garbage service	-- ⁶	0	--	--	--	--
Public awareness						
Percent aware of storm drain pollution prevention measures	-- ¹	75.0	--	--	--	--
Percent of people who report they recently littered	-- ⁷	5.0	--	--	--	--

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tained to avoid environmental pollution.

The following key issues and programs will be discussed under Current Status and Trends: landfill, recycling, waste reduction, yard waste composting, refuse-hauling services, garbage complaints, limited landfills, construction site waste, Keep Lincoln and Lancaster County Beautiful pro-

gram, non-point source pollution, illegal dumping, cleanup activities, litter reduction, environmental education, and environmental awards.

The topics of toxic reduction, pollution prevention, hazardous material risk reduction, and special waste are addressed in Healthy People 2010 Toxic and Hazardous Materials.

Current Status and Trends

In 1991, the Environmental Protection Agency (EPA) promulgated stringent environmental regulations for municipal solid waste (MSW) management in landfills.³ Prior to that time, EPA's focus had been on treatment of hazardous wastes while MSW was much less regulated, creating problems such as groundwater contamination and landfill gas migration.

These EPA rules were adopted by the Nebraska Department of Environmental Quality, with additional legislation (LB 1257, the Integrated Solid Waste Management Act) requiring local government to become more responsible for managing solid waste in their respective communities. The state's Integrated Solid Waste Management Act requires local governments to develop solid waste management plans, set prohibitions against disposal of "banned" waste items in landfills, and establish incremental recycling goals.⁴

The result of this legislation was the closure of old landfills, a reduction in certain hazardous waste (oil, batteries) entering landfills, an increase in recycling, and conservation of existing landfill space. While these significant improvements have greatly benefited both the environment and public health, the cost of solid waste management has increased dramatically in Nebraska and nationally.

In 1990 the average annual expenditure for solid waste management programs was \$2.1 million compared to

\$6.5 million in 1999.⁵ This increase in expenditures for solid waste management is a direct result of additional emphasis toward environmental protection standards and developing waste recycling and reduction programs. The tipping charge (fee per ton or load) at Lincoln's solid waste disposal sites fund numerous allied solid-waste management efforts in addition to the landfill operation. These include recycling drop-off sites, recycling education, recycling technical assistance, yard waste composting, closure of the North 48th Street Landfill, household hazardous waste collections, special waste management and technical assistance, and illegal dumpsite cleanups.

In FY 1988–89 the per capita disposal of waste was 2,506 pounds per year. Ten years later, in FY 1998–99, with an estimated 286,322 tons of waste deposited in the Bluff Road Landfill, the per capita amount is 2,431 pounds per year.⁵ This represents a 3% decrease in the disposal rate per capita. The per capita disposal rate has fluctuated from year to year over the last decade. The overall decrease is attributed to a number of factors. This includes increased recycling by businesses and individuals, and improvements in packaging called "light-weighting," which has reduced the weight of packaging. Increased emphasis on waste reduction by area businesses has also played a role.

Population in the county over the ten-

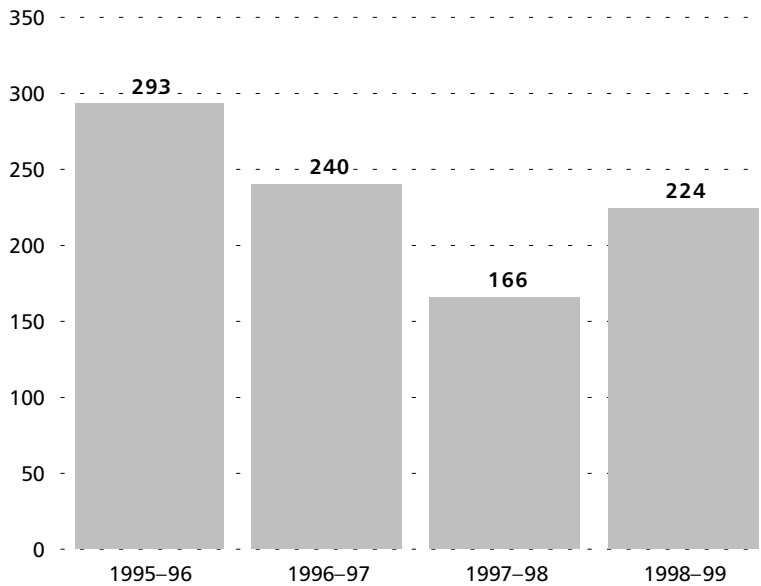


Figure 1: Illegal dumping and clean-up referrals.¹

year period increased 11.3% to an estimated 235,539 people. However, with the improved economy and resulting increased economic activity the overall per capita disposal rate may have reached its low point and appears now to be increasing slightly.

In FY 1997-98, the municipal solid waste that includes the residential and commercial waste disposed of in the Bluff Road Landfill plus the amount of traditional materials recycled and composted by the public and private sectors totaled approximately 449,375 tons. Of this total, 280,000 tons, or 62.3% of the waste, was landfilled, and 169,375 tons, or 37.7%, was recycled.⁵ Although the City and County continue to rely on the landfill as the principal means of managing waste, recycling and composting have become important elements in the solid waste management system.

Additional recycling and waste diversion practices are also operating in the County. In FY 1997-98 more construction and demolition (C & D) debris was recycled by the private sector than was disposed of in the C & D landfill. Approximately 232,800 tons of concrete and asphalt were recycled by the private sector compared to 88,341 tons disposed of in the 48th Street C & D landfill. More than 28,903 tons of

sewage sludge (biosolids) were reused by farms as a fertilizer in the same period. Wood debris from the October 1997 snowstorm were recovered for beneficial use rather than burning or burying it as waste. The storm generated the equivalent of one year's worth of municipal solid waste at the sanitary landfill. It was shredded into more than 23,000 dump-truck loads of wood chips that were used in a beneficial manner in the county.⁵

Future trends in solid waste management for Lincoln and Lancaster County will likely include continued emphasis on toxicity reduction, increased residential and commercial recycling; continued closure and environmental monitoring of the North 48th Street Landfill; utilization of landfill gas at the Bluff Road Landfill; and continued development, long-term responsible management and maintenance, of the Bluff Road Landfill.

Residential refuse collection service in Lancaster County is provided by independent refuse hauler businesses. Garbage service is not mandated by local code for all households. Solid and liquid waste hauling businesses are permitted by LLCHD.⁶ An annual inspection of the waste hauling vehicles reduces the chance of spillage during transport of the waste. A national trend is the consolidation of waste management firms; that is, the percentage of small hauling businesses and municipal collection systems are decreasing, and many sanitary landfills are being privatized as well. In Lancaster County, however, maintaining high standards of private service by the haulers and high standards for quality control of landfill operations is important.

Accumulation of garbage, improper garbage storage, rodent/insect problems, and other public health nuisances are handled on a complaint basis. In 1998-99 LLCHD received 1,264 complaints to investigate.⁷ If a property owner fails to remove garbage after

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receiving a five-day notice from LLCHD, the condition is abated. All costs associated with the abatement are then assessed to the property. These efforts reduce infestations of rodents and insects, access to garbage by animals and people, and litter.

Construction sites create multiple waste management issues. Lincoln and other communities in the county have an ongoing trend of growth, and the construction industry has been stretched to meet the needs. Material waste and refuse from construction sites that are not properly contained create litter problems. Adequate toilet facilities need to be provided to prevent unhealthy sanitation practices. Sediment erosion into streets and storm drains creates a major source of non-point source pollution. Each of these issues must be addressed through education and enforcement, as needed.

The Keep Lincoln and Lancaster Beautiful Program has evolved from the Lincoln–Lancaster County Clean Community System program, which began in 1982. It is an affiliate of the Keep America Beautiful organization and uses a behavior-based systems approach to changing attitudes and practices related to proper solid waste management – objective information, citizen involvement, and a focus on results and positive reinforcement.⁸ This program coordinates the non-point source pollution stenciling project, the campaign for reporting illegal dumping, the neighborhood and mini-grant cleanups, litter and illegal dumping reduction education, and the annual Lincoln and Lancaster County Environmental Awards Program.

Non-point source pollution (NPSP) is pollution found in water running off streets, parking lots, and lawns into storm drains. NPSP is the major cause of pollution in our nation's lakes and streams. To educate the public, a storm drain stenciling program was started in

1994, where inlets are stenciled with "No Dumping, Leads to Stream." Approximately 7,000 inlets have been stenciled by volunteers from 1994 to 1999. Homes near newly stenciled sites receive a fish-shaped door hanger explaining what NPSP is and how to avoid contributing to it. The stenciling effort resulted in a permanent approach in 1997. All newly installed inlets are required to have the "No Dumping, Leads to Stream" message imprinted into the concrete.

In 1996 an educational campaign was started to address the problem of illegal dumping. A local task force developed a strategic plan, including increasing public awareness, improving reporting of dumping incidents, and aggressive enforcement. Four reusable billboards were designed encouraging people to report illegal dumpers. Three of these were adapted into bumper stickers to be used on county vehicles and sheriff cars. Improvements were made for the surveillance, reporting and timely clean up of these sites. Reported illegal dumping has decreased 23% from FY 1995–96 to FY 1998–99.⁷ In 1999 signs were developed for installation on county roads at locations with repeated incidences of illegal dumping, at the city limits of Lincoln, and at the Lancaster County lines. Enforcement is pursued in every situation possible.

An annual grant from NDEQ has provided funding for cleanup mini-grants as an incentive to clean up litter on public land. In FY 1998–99, 2,654 volunteers cleaned up 228.5 tons of waste. Twenty-three mini-grants were awarded to neighborhood associations, villages, families, groups, and organizations.⁶ Cleanup to reduce litter is an important focus in helping keep our communities clean and healthy.

A trend of concern is that as children become teenagers, they appear to lose their value of caring for the environment. A severe and ongoing litter

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problem exists at most high schools in Lincoln. Talks with school administrators have provided little success and usually resulted in increased cleanup by maintenance personnel rather than behavioral modification of the students. A strong high-school environmental educational program and a peer-driven program for maintaining clean schools are needed.

Since 1993 the Star City Holiday Parade has been promoted as a litter-free event. Sixty sidewalk volunteers educate the crowds and make it easy for people to properly dispose of their litter. Up to 80 additional volunteers form a parade walking unit that presents the “litter free” message in a fun and festive way.

The trend from paper to plastic shopping bags has increased the problem of litter in the environment, especially at the landfill and in commercial

areas. These nonbiodegradable, light-weight plastic bags are easily picked up by the wind and carried great distances.

Since 1995 the Earth Wellness Festival annually provides nearly 3,000 Lancaster County fifth-graders with hands-on environmental educational experiences relating to the land, water, air, and living resources. Fifteen representatives from 11 agencies serve on the steering committee to organize this event and 300 volunteers make it happen.

Recognition of those who exemplify environmental stewardship in the community is the focus of the annual Lincoln and Lancaster County Environmental Awards Program. Each April, near or on Earth Day, this award program recognizes both large and small businesses, individuals, educators, and residential developers for their positive efforts that impact our environment.

Health Disparities

Because refuse service is not automatic nor required for single family homes or duplexes, many rental residences do not have refuse service. This reflects most strongly on the low-income populations in Lincoln. An attempt to change state statute to allow Lincoln to require refuse service for all rental residential property failed to pass in 1999, but will continue to be pursued by the City of Lincoln.

The report “Minority Community

Environmental Health Hazards Risk Survey” identified that persons of racial or ethnic minority had strong interest in basic environmental health issues such as sanitation.⁹ Outreach and education programs that address basic environmental health issues, such as refuse storage and disposal, insect control, rodent control, and recycling, all should be developed.

Public Health Infrastructure

Statistical information is gathered annually for reports and record keeping. This includes solid waste nuisance complaint data, landfill data, wastewater treatment facilities data, and recycling data. Lincoln ordinances and County resolutions are reviewed and updated as needed to maintain the level of regulation required to maintain the

public health related to waste. State statute revisions will be proposed to allow Lincoln and Lancaster County to address waste issues. LLCHD policies and procedures will be maintained to assure adherence to policies as approved by the Board of Health. A community survey should be completed to provide data on the indicators selected.

Recommendations

- ♦ Keep the per capita waste disposal at or below the existing level.
- ♦ Revise the Lincoln Solid Waste Plan in cooperation with Lincoln Public Works and Utilities.
- ♦ Enhance end-market opportunities to separate materials for recycling.
- ♦ Encourage resource conservation through economic development opportunities.
- ♦ Encourage recycling by reducing the cost of curbside recycling services.
- ♦ Establish additional Recycling drop-off sites.
- ♦ Strengthen end use in the region for land application of bio-solids and beneficial use of yard waste compost.
- ♦ Revise the Lincoln Solid Waste Code (Lincoln Municipal Code 8.32).
- ♦ Revise or delete the Limited Landfill permitting requirements in the Health Code.
- ♦ Educate about and enforce littering violations at construction sites.
- ♦ Implement construction-site best management practices as a means to enhance surface water quality by reducing soil erosion.
- ♦ Assure adequate toilet facilities are available at construction sites.
- ♦ Maintain the behavior-based systematic approach to changing attitudes and practices related to proper solid waste management, using objective information, citizen involvement, and a focus on results and positive reinforcement.
- ♦ Adopt an ordinance that requires mandatory collection for household refuse on rental residential properties.
- ♦ Continue the shift of solid/liquid waste enforcement from re-active to pro-active.
- ♦ Identify and clean up any remaining dump sites in Lancaster County.
- ♦ Develop and maintain a system of education, enforcement, and clean up, to address the problem of illegal dumping. This includes dumping in the county right-of-ways, at recycling sites, at parks, and in other people's dumpsters.
- ♦ Provide education and information to the public to inform them of proper disposal requirements or recommendations for waste, such as household hazardous waste, old tires, old appliances, and lawn waste (grass and leaves).
- ♦ Promote the behavior-based systems approach to changing attitudes and practices at high schools to reduce their litter problem.
- ♦ Encourage household usage of reusable shopping bags.
- ♦ Continue to promote environmental awareness and commitment through expanded school curriculum, public information programs, publicity, special events, minority community centers and organizations, legislative action, and special-interest groups.
- ♦ Establish a community-lead outreach program on home environmental issues with minority community groups.
- ♦ Assure recycling opportunities are made available and located in cooperation with minority community centers and organizations.
- ♦ Promote a "mini-grant" or barter system for cleanup, education, and recycling activities with minority community centers.

Notes

Related discussion or indicators are located in the chapters on *Toxic and Hazardous Materials* and *Public Health Emergency Management*.

Table 1

- Currently no data source.
- 1. Currently no data source. Could be obtained through community surveys or development of a community surveillance system. Recycling should be defined as people surveyed who report routinely recycling at least three of the following recyclables: newspapers, aluminum cans, tin cans, glass, milk and pop plastic bottles, or mixed/office paper.
- 2. Dept. of Public Works and Utilities, City of Lincoln. 1998–99 calculation of the total amount of waste received at the county landfill, divided by the population in Lancaster County.
- 3. Includes only illegal dumping on public property referred for clean up by Lincoln–Lancaster County Health Dept. (LLCHD), combined three year average for 1996–97, 1997–98, and 1998–99.
- 4. Lincoln–Lancaster County Health Dept. Data (LLCHD), combined three year average for 1996–97, 1997–98, and 1998–99.
- 5. Currently no data source. Could be obtained from current photometric survey data or future litter survey index data collected by the Keep Lincoln–Lancaster County Beautiful Program.
- 6. Currently no data source. Could be obtained through development of community surveillance system or through joint efforts with garbage removal services in each community.
- 7. Currently no data source. Could be obtained through community survey including a question such as, “In the past

30 days have you dropped litter, including cigarette butts, on city sidewalks, streets, parking lots, parks, or other people’s property.”

Figure 1

- 1. Lincoln–Lancaster County Health Department data.

Narrative sources

- 1. Nebraska’s Environment 1997 – 25 Years of Environmental Programs, Nebraska Department of Environmental Quality
- 2. George L. Kelling and Catherine M. Coles, *Fixing Broken Windows*, (New York: Simon and Schuster, 1996).
- 3. Environmental Protection Agency – 40 CFR 258
- 4. Integrated Solid Waste Management Act (NRSS 13-2001 through 13-2043), Nebraska Department of Environmental Quality, 1200 N Street Suite 400, Lincoln NE 68509, phone 402-471-2186, <www.deq.state.ne.us>
- 5. Lincoln Public Works and Utilities – Solid Waste Operations, 6001 Bluff Road, Lincoln NE 68517.
- 6. Lincoln Municipal Code 8.32.
- 7. Lincoln–Lancaster County Health Department data.
- 8. Keep America Beautiful, Inc., 1010 Washington Blvd., Stamford, CT 06901, phone 202-323-8987, <www.kab.org>
- 9. Environmental Health Hazard Risks in the Minority Community, Lincoln, NE, by Rodrigo F. Cantarero, Ph.D. and Blanca E. Ramirez, M.C.R.P.